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Chemistry Teachers' Training in *Turkey*



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CHEMISTRY TEACHERS' TRAINING IN TURKEY

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Abstract

In this report, a general overview of training of science teachers and chemistry teachers in the Turkish context has been carried out. In addition, positive effects and features of Chemistry is All Around Network project activities on the training and teaching of chemistry teachers have been overviewed and clarified. The initial part of the report comprises the current situation of initial and in-service training of science teachers with special focus on chemistry teachers in Turkey. Various studies and researches on the training of science and especially chemistry teachers were reviewed, examined and evaluated. Moreover, an analysis of the effects of Chemistry Network Portal on the training of chemistry teachers has been carried out. The results and suggestions from the workshop which has been organized by the network of teachers and experts from Turkey have also been presented.

1. National Situation on Teacher Training

Education is a phenomenon that it is in the every phase of individuals' lives from birth to death. Education consists of political, social, cultural and individual phenomena, so it is very difficult to be defined. Every country has formed their educational systems. Teachers who are one of the most important factors, determine the quality of education, have the most important role in the development of the countries, and have the quality of educating human resource and transferring to the next generation. In this respect, teachers who have important roles in the education, teaching process and individuals' development should have the qualifications in the level of improving education and students' quality. In other words, with unqualified teachers it is not possible to have both skilled and qualified education. At this point, teacher training process is very important (Cit. Çakmak etc).

The founders of the Republic not only reformed the teacher training institutions that they took over from the Ottoman Empire according to the fundamental values of the Republic, but also tried to establish new institutions that train teachers. Teacher training which was conducted by Ministry of National Education according to an employment based policy all along was left to universities in 1982 (Bilir, 2011). However, teacher training in the history of Turkish education starts from the 19th century. "Dârülmualimin-i Rüşdi" was the first teacher training school that was built on the 16 March 1848 in Fatih in İstanbul until the middle of the 19th century. This school, with 3 year training education had continued till 1868. In 1868, "Dârülmualimin-i Rüşdi" had been established for only male students to train them as primary teachers. In 1870, however, Darülmualimat Female Teacher School had been established for only females. The first Higher Education School "Darülmualimin-i" Aliye had been opened in 1891. Darülmualimins first had been changed to be "Muallim School" in 1924 and then in 1935 had been changed again to be "Muallim Mektebi". On the 22nd March 1926, with the 789 number Maarif Law Teacher Schools and Village Teacher Schools had been opened but they had been closed after 4 years since they had not reached their aim. Gazi Pedagogy Institution that had been opened in Konya in 1926 and then had been moved to Ankara in 1930 had trained teachers for secondary schools. In later years, it had become to be known as Gazi Secondary Teacher School and Education Institutions respectively. In 1937, with the Law of Village Trainers, Village Training Dormitories that had composed the first step of Village Institutions had been opened. According to the Law of Village Institutions that had been enacted in April in 1940, those schools were to take students from their villages and train them without isolating them from their environments. However, at the end, all the Village Institutions were closed in 1954 and redesigned under the name of elementary teacher training



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school with 6-year duration (Cit.Çakmak, Gezer Faslı and Atanur Baskan, 2013). On the 14 June 1973, Educational Institutions with 2-year duration were opened to train primary school teachers in higher education Higher Education Law with the 2547 number that was introduced in 1981, all the institutions training teachers were gathered under the roof of Higher Education on the 20 July 1982 (Cit. Çakmak etc).

1.1 Initial Teacher Training

For restructuring teacher education programmes and raise standards in education in schools, YOK and MEB have collaboratively prepared the National Education Development Project (NEDP). The project which was put into effect in 1998, introduced new concepts and important changes to the teacher education system in Turkey. These changes included the revision and restructuring of the partnership between schools and universities, developing an accreditation programme for the teacher education courses and defining standards expected from intending teachers. In addition, at the school level, for the first time, the quality of classroom teaching has started to be questioned and a need for a shift from traditional teacher-centered classrooms to more pupil-centered ones has been emphasized. Classroom learning has been intended to be 'active, purposeful and goal oriented' and teachers would be educated accordingly (Odabaşı Çimer and Çimer, 2012).

During 2012-2013 academic year with 4+4+4 education system compulsory education was increased to 12 years (www.resmigazete.gov.tr). Nowadays, in Turkey, education starts at the age of 3 with preschool that is not compulsory and education covers the compulsory education that goes up to the age of 18. As of 30 September 2012, children 66 month old start first class at elementary school. Compulsory education is implemented as 4+4+4 system. First 4 year covers elementary school, second 4 year covers secondary school and third 4 year covers lycee. Students who want to continue their education have to pass YGS (Higher Education Access Exam) and LYS (Undergraduate Placement Exam) that are held by ÖSYM (Student Selection and Placement Centre). Students can start their university after their placement is done by ÖSYM (Çakmak etc, 2013).

The student teachers first attend the classes and observe the experienced teacher during their university education. The students are assessed according to the rules of their own university assessment and evaluation conditions. They are assessed by the course teachers. After attending to the classes as observers for a certain period, the student teachers can teach in the classes under the guidance of the class teacher or the lecturer from the university. The teacher candidates, who successfully attend a four-year initial teacher training program, get a Primary Teacher Diploma. After the students graduate, they have to pass the Examination for the Selection and Placement of Candidates for Professional Posts in Public Organizations (KPSS) and get a certain grade in order to be appointed. Those who are appointed have to work for a year and be assessed again before they are called professional teacher (Kilimci, 2009).

1.2 In-service Teacher Training

In-service training is accepted as an effective method of increasing the knowledge, skills and positive beliefs of teachers. It is a process used to continue the teachers' education once they have received their certification in teaching and are employed in a professional position. The Education Information Network in the European Union (EURYDICE) defines in-service training as 'a variety of activities and practices in which teachers become involved in order to broaden their knowledge, improve their skills and assess and develop their professional approach' (Cit. Bayrakcı, 2009).

The in-service Teacher Training Department at The Ministry of National Education is responsible for all the training events. This department prepares an annual teacher training program every year, which includes training events for all teachers - not only English teachers - for the whole academic year. The teachers apply for the training or refreshing events on line and the Teacher Training Department approves or refuses the applications. The teacher training system in Turkey is centralized and managed from the capital city, although there are teacher training departments in every national education liaisons. Once the teachers' applications are accepted, all the expenses are funded by the Ministry of Education (Köyalan, 2011).





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According to the Civil Servants' Law and the National Education Principal Law, Turkish teachers should attend in-service training programs in order to continue their professional development (Devlet Memurları Kanunu, 1965; Milli Eğitim Temel Kanunu, 1973). In-service training activities are planned and carried out by the Department of In-Service Training in the Ministry of National Education. Law 3797, which refers to the organization and functions of the Ministry, defines the duties of the Department of In-service Training as carrying out 'all services about the professional development of the staff of the Ministry via in-service training and other methods in the country and abroad'. In-service training activities used to be conducted solely at the national level until 1993. But these courses were very inadequate in terms of quality and quantity. The Ministry decided to share its authority with local educational directorates in order to enhance the in-service training programs and professional development of teachers. An expert from the Department of In-Service Training notes that (Bayrakçı, 2009):

"Before 1993, in-service training activities were only at the national level. The Department of In-Service Training were planning and organizing the activities. Even with the help of universities, the number of the courses and the participants were extremely limited compared with overall number of the Ministry's staff. Moreover, financing teachers to come and stay in the central places to take in-service training was very expensive."

There is virtually no systematic in-service training program for teachers according to their years of experience. The only such program is internship training (Bayrakçı, 2009). As part of the teacher training programme, trainee teachers are required to undertake a practical placement within a school every semester. The first semester is spent observing the teachers and students in the classroom. During the second, they begin to assist teachers with lesson planning and marking assignments. Trainee teachers cover other aspects of teaching during this year, such as school administration and teaching legislation and regulations. Practical training normally ends at the end of one year by the evaluation of the tutor and an inspector coming from Ministry of Education (www.webcache.googleusercontent.com).

In the first year of the profession, all teachers are considered intern teachers and they take three different training programs: basic training, preparatory training and practical training. These training programs are conducted by the local National Education Directorates. After these programs there aren't any systematic training activities that teachers must participate in. However, they can apply for the grants provided by EU Comenius teacher training program and attend conferences, seminars, workshops if they want.

2. Assessment of the National Training of Science Teachers

Beginning in 2010 the exam is now similar to the **ÖSS-ÖYS system** in terms of topics. Students take the Transition to Higher Education Examination (YGS) in April. Those who pass the YGS are then entitled to take the Undergraduate Placement Examination (LYS), the second-round exam in the new system taking place in June. Students who only take the YGS, in which students have to answer 160 questions (Turkish language(40), maths(40), philosophy(8), geography(12), history(15), religion culture and morality knowledge(5), biology(13), physics(14) and **chemistry**(13)) in 160 minutes, are able to apply for associate degree programs. There are five LYS sessions whereas the previous university entrance system, the ÖSS, which was held once in a year throughout the country. Results are announced in July and students have to make their university preferences by the first week of August. They are placed in courses according to their scores and this is announced at the end of August (www.en.wikipedia.org).

The most significant reason why ÖSS is being conducted instead of personal interviews is the fact that the total capacity of universities is 450.000 while the number of candidates wanting to study at a college is 1.6 million and is increasing every year. However, "**Life = 180 minutes?**" is a slogan used by TED (Turkish Education Association) in order to criticize the ÖSS system for attempting to encompass all the work of a student throughout his or her 12 years of academic life in a 3 hour multiple choice exam. This is arguably unfair; however, the president of the ÖSYM exam board states that "ÖSS is the only available university entrance system until the number of people who apply to universities is lowered" (www.en.wikipedia.org). Therefore, the student selection system for higher





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education is a **torminous** process from the point of students who do not want their lives to be evaluated with few-hour, and the authorities who want to keep the system working.

In addition to a selection exam for higher education, there is also an exam for selecting pre-service teachers to work within the structure of the Ministry of National Education. In Turkey the students are assessed according to the rules of their own university assessment and evaluation conditions during the higher education. They are assessed by the course teachers. The teacher candidates, who successfully attend a four-year initial teacher training program, get a Primary Teacher Diploma. After the students graduate, they have to pass the Examination for the Selection and Placement of Candidates for Professional Posts in Public Organizations (**KPSS**) and get a certain grade in order to be appointed. Those who are appointed have to work for a year and be assessed again before they are called professional teacher (Kilimci, 2009). The content and validity of the KPSS are questioned by many institutions and individuals. With this examination system, the appointment to some fields of study requires very high scores, while some others very low scores. In the end, the teachers appointed through these two groups of appointments are evaluated in the same category and the pre-service teachers' chances either increase or decrease according to their fields of study. Due to all these aspects, the PPSE serves as a preliminary examination rather than a measurement exam (Altun Yalçın, Özturan Sağırılı, Yalçın, S. and Yalçın, P., 2012).

When we examine the **in-service teacher training** (IST) in Turkey, we can say that there are some problems and needs in the system. Some of the major problems can be presented as follows:

- In-service training activities are so limited for great number of teaching staff in schools.
- The finance for in-service training is definitely not enough.
- It is costly and it is not given those administration and travel fees to joiner teachers.
- There is no award or diploma for teachers who successfully finished course.
- Consequently, generally theoretically-based and it is insufficient for development of professional skills and education for teachers.

3. The Impact of the Project on Teacher Training

The workshop about training of chemistry teachers was realized with 15 participants in Education Faculty of Kırıkkale University on May 29, 2013. 3 of them were experts and 12 of them were researchers and teachers. the issues discussed and the following suggestions have been put forth about "Chemistry is all around Network Project".

The name of all the participants and the name of the institution they belong to;

Murat Demirbaş, Kırıkkale University; Mustafa Bayrakçı, Sakarya University; Mine Özkurt, Şehit Fatih Kemal Yarar Ortaokulu, Abdullah Anıl Hoşbaşı, Kırıkkale University; Nurcan Ertuğrul, Hacıibrahimuşağı Ortaokulu, Gamze Özbek, Kırıkkale University, Gülşah Tanrıverdi, Periyot Etüt Eğitim Merkezi; Ramazan Göğüş, Karakeçili Çok Programlı Lisesi; Hüseyin Miraç Pektaş, Kırıkkale University; Erdem Çakır, Pİ Analitik Özel Eğitim Kurumları, Mehmet Polat Kalak, Alfen Özel Eğitim Kurumları, Ömer Faruk Şen, Kırıkkale University, İbrahim Ethem Yavuz, Bahşılı Atatürk Ortaokulu, Süleyman Seren, Kırıkkale University, Elif Tuğçe Karaca, Kırıkkale University.

Training Pre-service and In-service Chemistry teachers is an important issue. In this regard, it is necessary that doing more and more applications, informed about new teaching methods and techniques, having enough knowledge about how to use measurement and evaluation for Pre-service teachers. Teachers have been made Emphasis on these issues at the workshop. Furthermore, teachers in service have stated that they are participated in many in-service training courses which are organized by Ministry of National Education, remaining the theoretical level and not very concerned with their fields. The courses should be more practical rather than theoretical.

Teachers have stated they know about Theoretical structure of methods but they have trouble with the application. For instance they have explained that they do not know how to use the methods and techniques such as analogy, concept maps, V-diagram, Case study. Önen, Mertoğlu, Saka and Gürdal (2009) studied with 104 teachers and 26 of them belong to branch of chemistry in their research that is named "In-service training of teachers on teaching methods and techniques to the Summary Effect: Öpyep Example (ISE)". Before ISE teachers stated that they used methods of teaching techniques such as laboratory, computer-assisted instruction, brain storming, event inquiry, group work, games,



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problem-based learning, Field-trip and direct observation, models. After the study of ISE teachers have stated that they will use methods of teaching techniques such as laboratory, computer-assisted instruction, concept maps, Field-trip and direct observation, projects, puzzles, model, drama, brain storming, discovery learning, case studies, story completion, problem-based learning, in the event inquiry, cooperative learning, group work, games, analogy, V diagram, part of teaching, case study.

4. Conclusions

As a result, from the perspective of chemistry education, some chemistry teachers are unaware of the program and confuse the course book with the program itself and the ones who are aware of the program also lack sufficient information regarding its context. This indicates that IST courses and seminars organized by Ministry of National Education to promote the program have fallen short of expectations. A majority of chemistry teachers face difficulty with the extra work brought by the program hence they feel in need of ready-materials appropriate to implement the program (Ceng, Usta, Yıldırım and Ayas, 2010).

Chemistry teachers feel discontent with the fact that in neither preparation nor implementation process, their opinions were taken into account in decision-taking phase. It is rather thought-provoking that the practitioners of program, teachers themselves, were not included in this process and it is clear that this failure will inevitably affect attempts on program development adversely. Chemistry teachers need, first of all, IST course that will enable them to conduct their lesson in line with the approach introduced by the renewed Chemistry Program. Within this scope the designated IST needs can be given as below (Ceng et al., 2010):

- Methods that fit into the approach necessitated by the new chemistry program,
- Selecting appropriate methods for the topics, preparing sample lessons with these methods,
- Informing about measurement and evaluation,
- Conducting sample lessons in an environment where teachers are students.

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